What is claimed is:

1. A method of packaging a resonator sensor for analyzing a fluid, comprising:
forming an assembly by a method that includes
affixing an electronic component to a platform, and
affixing a resonator to the platform, to provide a sensing surface for exposure to the fluid and to provide a spaced relationship between the exposed sensing surface and the platform; and
encapsulating at least a portion of the assembly in a protective layer.

2. The method according to claim 1, wherein the platform comprises a curved wall.

3. The method according to claim 1, further comprising a support disposed between the platform and the resonator, wherein the support is selected from a polymer, a ceramic or a combination thereof.

4. The method according to claim 3, further comprising an electrical conductor connecting the resonator to the platform.

5. The method according to claim 4, wherein the resonator is a tuning fork.

6. The method according to claim 5, wherein a base material of the tuning fork comprises quartz, lithium niobate, zinc oxide, lead zirconate titanate (PZT), gallo-germanates (e.g., Langasite ($La_3Ga_5SiO_{14}$), Langanite, or Langatate), diomignite (lithium tetraborate), bismuth germanium oxide gallium phosphate, gallium nitride, aluminum nitride or combinations thereof, and the tuning fork comprises a coating that comprises a material selected from polymers, ceramics, metals, metal carbides or nitrides, diamond, diamond-like carbon, and combinations thereof.

7. The method according to claim 1, further comprising operating the resonator sensor in automotive vehicle for analyzing the condition of an engine oil.

8. The method according to claim 7, wherein the resonator is operated at frequency of less than about 1 MHz.

9. The method according to claim 1, wherein the encapsulating step comprises applying a protective layer covering the platform and the resonator while maintaining the exposed sensing surface such that the exposed sensing surface can displace the fluid in contact therewith.

10. The method according to claim 9, wherein the protective layer is selectively applied by spraying, brushing, over molding, laminating or by combinations thereof.

11. The method according to claim 9, further including blocking the exposed sensing surface with a removable protective barrier prior to applying the protective layer.

12. The method according to claim 11, wherein the removable protective barrier is a reusable or consumable barrier.

13. The method according to claim 12, wherein the removable protective barrier is a consumable barrier that comprises a polymer, starch, wax, salt or other dissolvable crystal, low melting point metal, a photoresist, or another sacrificial material.

14. The method according to claim 12 wherein the removable protective barrier is a reusable barrier that comprises a relatively soft material that will not plastically deform the resonator if it contacts the resonator.

15. A method of packaging a flexural resonator sensor for analyzing a fluid, comprising:

forming an assembly by a method that includes

affixing an electronic component to a platform

affixing a coated or uncoated flexural resonator, having a sensing surface for exposure to the fluid , to the platform with a conductive path therebetween, wherein a spaced relationship is created between the exposed sensing surface and the platform; and

encapsulating at least a portion of the assembly in a protective layer.

16. The method according to claim 15, further comprising a support disposed between the platform and the resonator, wherein the support is selected from a polymer, a ceramic or a combination thereof.

17. The method according to claim 16, further comprising a wire conductor connecting the resonator to the platform.

18. The method according to claim 15, further comprising operating the resonator sensor in automotive vehicle for analyzing the condition of an engine oil.

19. The method according to claim 18, wherein the resonator is operated at frequency of less than about 1 MHz.

20. A method of packaging a tuning fork resonator fluid sensor assembly, comprising:

forming an assembly by a method that includes

attaching an application specific integrated circuit to a platform;

affixing a tuning fork resonator, having a coated sensing surface for exposure to a fluid, to the platform, the sensing surface of the tuning fork resonator being coated with a support layer selected from a polymer, a ceramic, or combination thereof, and a conductive path between the integrated circuit and the tuning fork resonator, wherein a spaced relationship of at least one width of at least one tine of the tuning fork is created between the exposed sensing surface and the platform; and

applying a protective layer to encapsulate at least a portion of the assembly, the encapsulated portion of the assembly comprising the application specific integrated circuit, the protective layer being effective to protect the integrated circuit from operating conditions over a temperature range of at least -40° C to 170° C, while allowing the sensing surface of the resonator to be exposed to the fluid.

21. A method of packaging a resonator sensor for analyzing a fluid, comprising:

affixing a resonator to a platform, to provide a sensing surface of the resonator for exposure to the fluid and to provide a spaced relationship between the exposed sensing surface and the platform, wherein a support is disposed between the resonator and the platform, and the resonator is connected to the platform with a conductive path, and

providing a housing substantially surrounding the resonator while maintaining exposure of the sensing surface to the fluid.

22. A resonator sensor for analyzing a fluid, comprising

an assembly comprising (i) an electronic component on, including affixed to or integral with, a platform, and (ii) a resonator having a sensing surface for exposure to the fluid, the resonator being on, including affixed to or integral with, the platform with a spaced relationship between the sensing surface and the platform, the resonator being in electrical communication with the electronic component, and

a protective layer encapsulating at least a portion of the assembly.

23. A resonator sensor for analyzing a fluid, comprising:

an assembly comprising (i) an electronic component on, including affixed to or integral with, a platform, (ii) a coated or uncoated flexural resonator having a sensing surface for exposure to the fluid, the flexural resonator being on, including affixed to or integral with, the platform with a spaced relationship between the sensing surface and the platform, and (iii) a conductive path between the electronic component and the flexural resonator; and

a protective layer encapsulating at least a portion of the assembly.

24. The resonator sensor of claims 22 or 23 wherein the resonator is a flexural resonator adapted so that the sensing surface of the resonator can displace fluid during operation of the sensor.

25. The resonator sensor of claims 22 or 23 wherein the resonator is a tuning fork resonator.

26. A resonator sensor for analyzing a fluid, comprising:

an assembly comprising (i) an integrated circuit on, including affixed to or integral with, a platform, (ii) a tuning fork resonator having a sensing surface for exposure to a fluid, the tuning fork resonator being on, including affixed to or integral with, the platform with a spaced relationship between the exposed sensing surface and the platform, and (iii) a conductive path between the integrated circuit and the tuning fork resonator; and

a protective layer encapsulating at least a portion of the assembly, the encapsulated portion of the assembly comprising the integrated circuit, the protective layer being effective to protect the integrated circuit from operating conditions of the fluid while allowing the sensing surface of the resonator to be exposed to the fluid.

27. The resonator sensor of claim 26 wherein the protective layer is effective to protect the integrated circuit from operating conditions comprising a temperature range of at least -40° C to 170° C.

28. The resonator sensor of claim 26 wherein the sensing surface of the tuning fork resonator is coated with a support layer selected from a polymer, a ceramic, or combination thereof.

29. The resonator sensor of claim 26 wherein the spaced relationship between the exposed sensing surface and the platform is at least one width of at least one tine of the tuning fork.

30. A resonator sensor for analyzing a fluid, comprising:

a resonator having a sensing surface for exposure to the fluid, the resonator being affixed to a platform with a spaced relationship between the exposed sensing surface and the platform,

a support disposed between the resonator and the platform,

a conductive path for electrically connecting the resonator to a circuit for for providing stimulus to the flexural resonator and for receiving a response signal from the flexural resonator, and

a housing comprising at least one wall and substantially surrounding the resonator while maintaining exposure of the sensing surface to the fluid.